Manoj Kumar Babu

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Education

- **WMG, University of Warwick** — United Kingdom
  PhD in Industrial Engineering — *Nov. 2014 – Till date*
- **Indian Institute of Technology (IIT) Kharagpur** — India
  Master of Technology in Industrial Engineering ; GPA: 8.98/10.0 — *Jul. 2012 – Jun. 2014*
- **Aeronautical Society of India** — India
  Bachelor of Engineering in Aeronautics; Score: 68/100 (All India Topper) — *June. 2006 – Dec. 2010*

Research Interests

- Applied Statistical Modelling, Assembly System Design, Optimisation, Machine Learning

Research Experience

- **WMG, University of Warwick** — United Kingdom
  Graduate Research Assistant — *Nov 2014 – Till-date*
  - **In-line Measurement**: Developed an dynamic spatio-temporal variation prediction methodology for effective in-line implementation of 3D-surface scanners.
  - **Manufactured Component/part Variation Modelling**: Developed a conditional simulation based designer friendly, variation modelling methodology for manufactured component/parts.
- **IIT-Kharagpur** — India
  Graduate Research Assistant — *July 2013 – June 2014*
  - **Decision Support System for Material Handling** : Developed a decision support system to optimally automate day to day decision making regarding stockyard maintenance and rake loading, for Dhamra Port Corporation Ltd., India.
- **Aeronautical Development Agency (ADA), DRDO** — India
  Junior Research Fellow — *Apr 2012 - July 2012*
  - **Systems Engineering**: Created a systems engineering framework for the conceptual design of a transport class aircraft.
  - **Multi-Disciplinary Optimisation (MDO)**: In-charge of Aerodynamic aspects of MDO of a transport aircraft using modeFrontier software.
  - **CAD Modelling**: Designed aircraft wing using CATIA design software.
- **Aeronautical Development Establishment (ADE), DRDO** — India
  Project Contract Engineer — *Apr 2011 - Mar 2012*
  - **Conceptual and Aerodynamic Design**: Designed a 2.3 kilogram autonomous Unmanned Air Vehicle (UAV) with an endurance of 2.5 hours.
  - **Aerodynamic and Stability Analysis**: Estimated aerodynamic drag of the UAV using engineering methods. Analysed flight data for characterization of take-off, landing, climb and turn performance of the UAV.
  - **Mechanical Design**: Meshed and analysed wing alone configuration of the UAV.

Work Experience

- **Aeronautical Development Agency (ADA), DRDO** — India
  Junior Research Fellow — *Apr 2012 - July 2012*
  Responsible for the aerodynamic aspects of the Multidisciplinary Design Optimization (MDO) of a transport class aircraft during its design phase and developed a MDO framework to handle the aircraft stability and aerodynamic interactions for the aircraft.
- **Aeronautical Development Establishment (ADE), DRDO** — India
  Project Contract Engineer — *Apr 2011 - Mar 2012*
  Involved in conceptual and preliminary design, aerodynamic analysis of Unmanned Air Vehicle (UAV), which resulted in a 2.3 kilogram autonomous Mini-UAV with an endurance of 2.5 hours.

Software and Programming Skills

Scripting	: Matlab, C++, Python	**CAD**	: CATIA, Solidworks
Robot programming	: Robot Studio	**3D Scanner**	: CoreView Pro & Teach
Version Control	: Git	**Statistical software**	: Minitab
Other Tools	: Microsoft Office, LaTeX		

Hardware Certifications

- **ABB**: Industrial robot (IRB:6620-150) programming and operation.
- **Hexagon**: White Light Scanner - WLS400A measurement solution programming and operation.

Academic achievements

- **WMG Scholarship**: Awarded full scholarship to pursue PhD at WMG, University of Warwick.
- **GATE Score**: Secured 94.9 percentile in national Graduate Aptitude Test in Engineering (GATE) examination.
- **MHRD Scholarship**: Awarded Ministry of Human Resource Development (MHRD), Government of India, scholarship to pursue M.Tech at IIT Kharagpur.
- **Shri R Venkataraman Prize**: Awarded for best overall performance in associate membership examination of the Aeronautical Society of India.
- **All India Ranks**: Have secured top ranks in various subjects in associate membership examination of the Aeronautical Society of India.

Publications

- **Journal**:

  Saurabh Pratap, **Kumar, Manoj**, Divyanshu Saxena, and MK Tiwari. Integrated scheduling of rake and stockyard management with ship berthing: a block based evolutionary algorithm. *International Journal of Production Research*, 54(14):4182–4204, 2016

- **Conferences**:

  Babu, Manoj, Pasquale Franciosa, and Ceglarek. Darek. Adaptive measurement and modelling methodology for in-line 3d surface metrology scanners. In *27th CIRP Design Conference Cranfield University, UK 10th – 12th May 2017*, volume 60, pages 26–31. Elsevier, 2017

  Saurabh Pratap, **Kumar, Manoj**, Naoufel Cheikhrouhou, and Manoj Kumar Tiwari. The robust quay crane allocation for a discrete bulk material handling port. In *Industrial Engineering and Engineering Management (IEEM), 2015 IEEE International Conference on*, pages 1174–1178. IEEE, 2015

  Rahul Ramanna, **Kumar, Manoj**, K Sudhakar, and Kota Harinarayana. Multidisciplinary design optimization of transport class aircraft. In *ICoRD'13*, pages 125–135. Springer, India, 2013

- **Working Papers**:

  Babu, Manoj, Pasquale Franciosa, and Darek Ceglarek. Dynamic Spatio-temporal Variation Prediction Methodology for In-line 3D Surface Scanners in Assembly Systems. *To be submitted to IEEE Industrial Infomatics*, 2017

  Babu, Manoj, Pasquale Franciosa, and Darek Ceglarek. Conditional simulation based non-ideal part modelling. *To be submitted to CAD*, 2017